

Warm-Up!

1. $2x^2 - 3x - 20 = 0$

$$(2x+5)(x-4) = 0$$
$$x = -\frac{5}{2} \quad x = 4$$

2. $3x^2 + 7x + 4 = 0$

$$(3x+4)(x+1) = 0$$
$$x = -\frac{4}{3} \quad x = -1$$

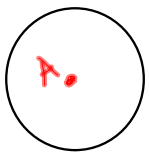
3. $4x^2 + 4x - 3 = 0$

$$(2x+3)(2x-1) = 0$$
$$x = -\frac{3}{2} \quad x = \frac{1}{2}$$

Ch 10 Circles

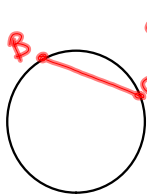
10-1 Circles and Circumference

10-2 Angles and Arcs



Circle--the set of all points in a plane equidistant from a given point

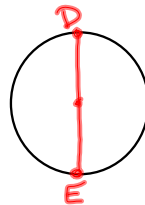
Center--given point



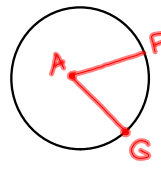
circle A

Chord--segment whose endpoints are on the circle

\overline{BC}

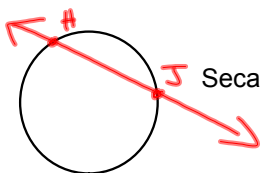


Diameter--chord that passes through the center



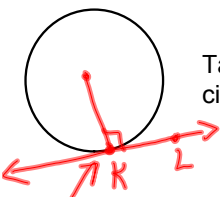
Radius--segment whose endpoints are the center and a point on the circle

\overline{AF}



Secant--line that contains a chord

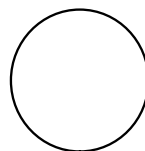
\overleftrightarrow{HJ} secant
 \overline{HJ} chord



Tangent--line that intersects the circle in exactly one point

point of tangency

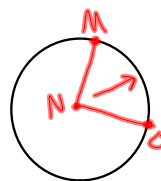
\overleftrightarrow{KL}



Circumference--distance around

$$C = 2\pi r$$

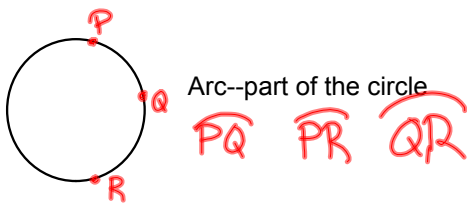
$$C = \pi \cdot d$$



Central Angle--Angle whose vertex is the center and whose sides are radii.

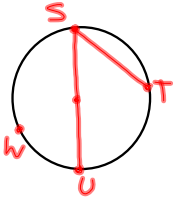
$\angle MNO$ intercepts \widehat{MO}

Central angle intercepts an arc.



Arc--part of the circle

\widehat{PQ} \widehat{PR} \widehat{QR}



Minor Arc-- $< 180^\circ$ 2 letters

Major Arc-- $> 180^\circ$ 3 letters

Semicircle-- 180° 3 letters

\widehat{STW} \widehat{STU} \widehat{SWU}

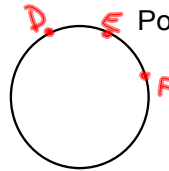
Measure of the central angle = measure of the intercepted arc



$$m\angle ABC = 90^\circ$$

$$m\widehat{AC} = 90^\circ$$

Theorem 10.1--In the same or congruent circles, 2 arcs are congruent iff their central angles are congruent

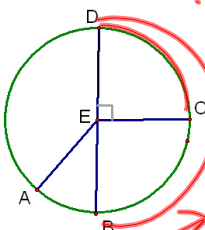


Postulate 10.1--Arc Addition Postulate-

$$m\widehat{DF} = m\widehat{DE} + m\widehat{EF}$$

Arc length

$$l = \frac{\text{Angle}}{360} \cdot C_{\text{circumference}}$$



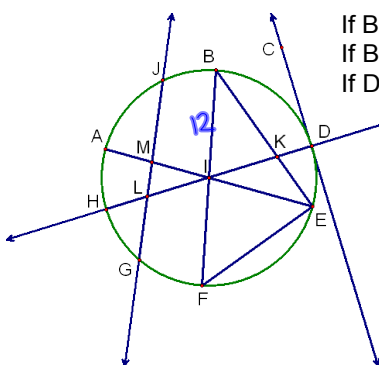
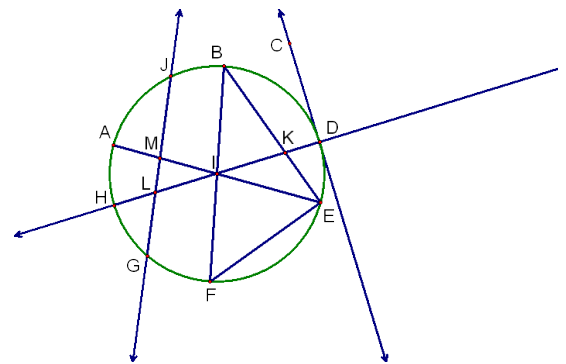
DB is the diameter
DB = 10 cm

$$C = 10\pi \text{ cm}$$

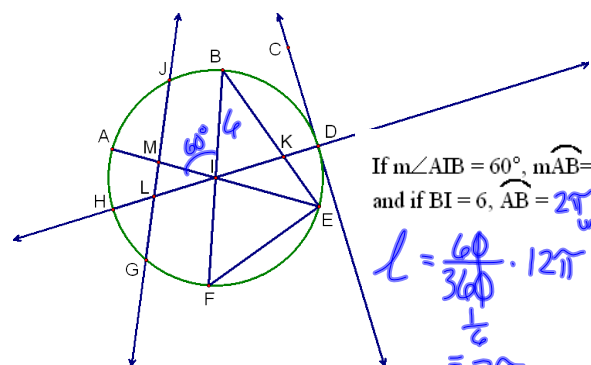
$$\widehat{DC} = \frac{90}{360} \cdot 10\pi = \frac{10\pi}{4} = \frac{5\pi}{2}$$

$$\widehat{DCB} = \frac{180}{360} \cdot 10\pi = \frac{1}{2} \cdot 10\pi = 5\pi$$

note no 'm' in front

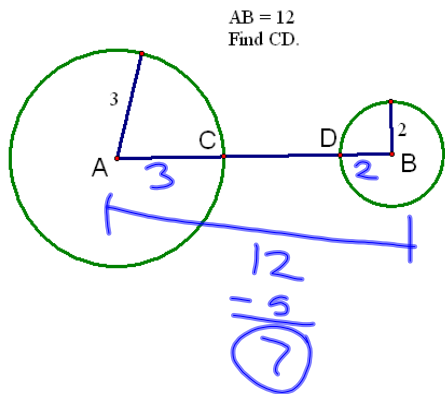
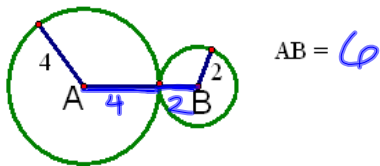
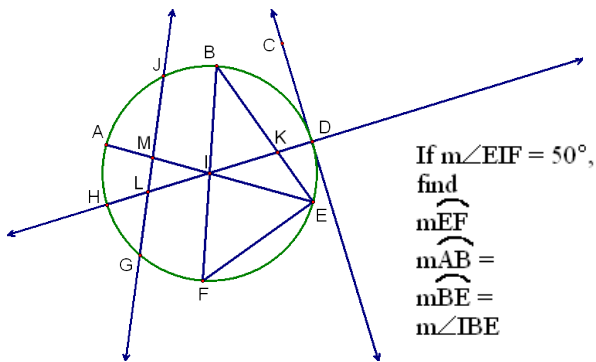
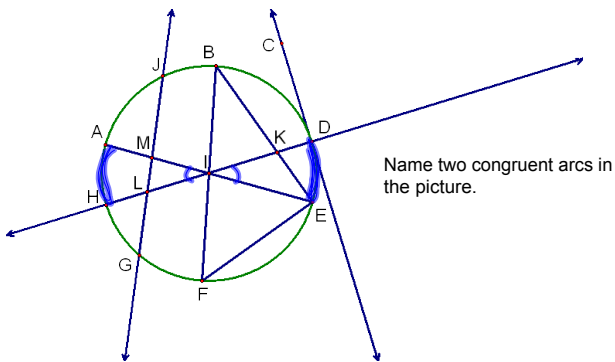
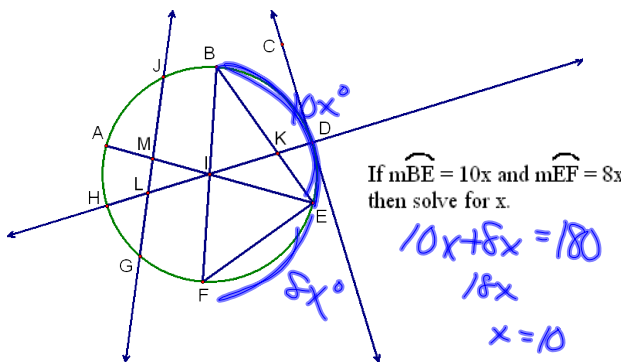
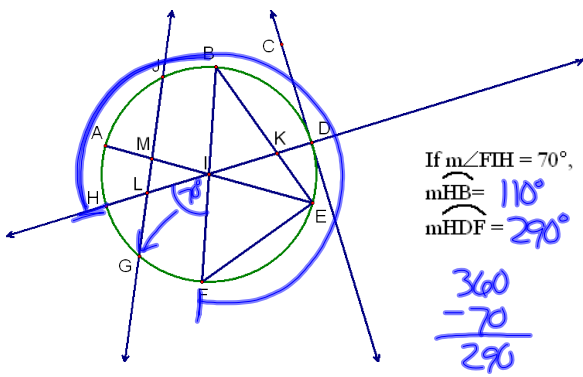


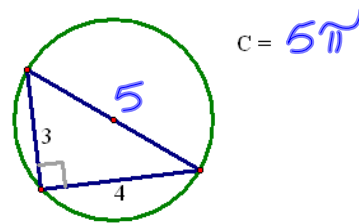
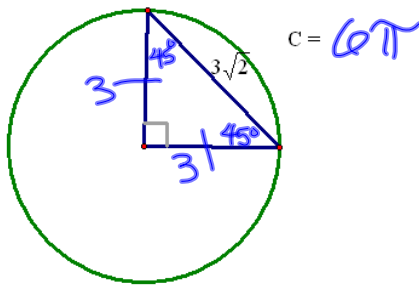
If BF = 18, AI = 9 C = 18π
If BI = 12, BF = 24 C = 24π
If DI = 19, FI = 19 C = 38π



If $m\angle AIB = 60^\circ$, $m\widehat{AB} = 60^\circ$
and if BI = 6, $\widehat{AB} = 2\pi$ units

$$l = \frac{60}{360} \cdot 12\pi = \frac{1}{6} \cdot 12\pi = 2\pi$$





HW

p526-527

16-20, 32-37, 52-54

p533

14-23, 32-42

For Exercises 16–20, refer to the circle at the right.

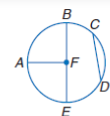
16. Name the circle.

17. Name a radius.

18. Name a chord.

19. Name a diameter.

20. Name a radius not contained in a diameter.



The diameters of $\odot A$, $\odot B$, and $\odot C$ are 10, 30, and 10 units, respectively. Find each measure if $\overline{AZ} \cong \overline{CW}$ and $CW = 2$.

32. AZ

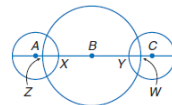
33. ZX

34. BX

35. BY

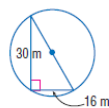
36. YW

37. AC



Find the exact circumference of each circle.

52.



53.



54.



Find each measure.

14. $m\angle CGB$

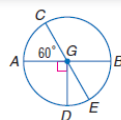
15. $m\angle BGE$

16. $m\angle AGD$

17. $m\angle DGE$

18. $m\angle CGD$

19. $m\angle AGE$



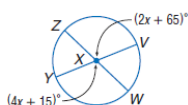
ALGEBRA Find each measure.

20. $m\angle ZXV$

21. $m\angle YXW$

22. $m\angle ZXY$

23. $m\angle VXW$



ALGEBRA In $\odot Z$, $\angle WZX \cong \angle XZY$, $m\angle VZU = 4x$, $m\angle UZY = 2x + 24$, and \overline{VY} and \overline{WU} are diameters. Find each measure.

32. $m\widehat{UY}$

33. $m\widehat{WV}$

34. $m\widehat{WX}$

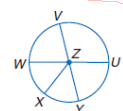
35. $m\widehat{XY}$

36. $m\widehat{WU}$

37. $m\widehat{VW}$

38. $m\widehat{VY}$

39. $m\widehat{WU}$



The diameter of $\odot C$ is 32 units long. Find the length of each arc for the given angle measure.

40. \widehat{DE} if $m\angle DCE = 100$

41. \widehat{DE} if $m\angle DCE = 90$

42. \widehat{HF} if $m\angle HCF = 125$

